

REMARKS

The present amendment is prepared in accordance with the new revised requirements of 37 C.F.R. § 1.121. A complete listing of all the claims in the application is shown above showing the status of each claim. For current amendments, inserted material is underlined and deleted material has a line therethrough.

Applicants appreciate the thoroughness with which the Examiner has examined the above-identified application. Reconsideration is requested in view of the amendments above and the remarks below.

Claims 11-25 drawn to an invention unelected with traverse, have been canceled. The claims remaining in the application are 1-7, 9, 10 and 26.

Applicants note that the rejection of claims 1-3, 6 and 10 under 35 USC 102(b) over Lee U.S. Patent No. 5,690,749 has been withdrawn.

Applicants also note that the rejection of claims 4 and 5 under 35 USC 103(a) as unpatentable over Lee and U.S. Publication No. 2002/0189635 to Bodet et al. has been withdrawn.

Further, the anticipation rejection of claims 1-6 over Dussault et al. has likewise been withdrawn.

Claims 1-3, 5, 6 and 10 have been rejected under 35 USC 102(b) as being anticipated by Japanese Patent document 3-261142. Basically, the Examiner contends that Applicants' invention is shown because the sacrificial coating of water on the substrate is

formed into ice which is considered to be a strippable film and that the particulate matter is caught in the ice and is removed from the substrate surface. With regard to the depending claims the Examiner contends that a semiconductor wafer is disclosed and that the sacrificial water coating is both a liquid and a fluid. Regarding claim 5, the energy is thermal, namely as heating either with hot water or with a high temperature heater. Regarding claim 10, the material must be a liquid and water is a liquid and the Examiner notes that claim 26 would be rejected but for the fact that freezing water is removal of energy not the addition of energy.

It is respectfully submitted that claims 1-3, 5, 6, and 10 are properly allowable over the Japanese Patent document.

The purpose of the Japanese patent is to free a patterned surface of fine dust particles by freezing the surface with dust and melting the ice so that the dust can be carried off. To accomplish this purpose a patterned surface of a substrate, such as a wafer, is washed with water. While moistened, the surface is cooled to freeze the water so that the fine dust particles on the surface which have not been washed away may be caught in the ice. The ice is melted by a high-temperature heater or hot water and it runs with the dust then the substrate is dried. In this matter, the surface is free of fine dust particles that cannot be removed by washing.

It is respectfully submitted that this is not Applicants' invention. Applicants' invention, as claimed, requires that a strippable film be formed on the surface of the substrate to be cleaned. First, energy is applied to the coated substrate to dislodge

particulate matter into the coating. The coating is then formed into a strippable film and the strippable film removed with the strippable film containing particulate matter therein. Applicants are not forming a strippable film and then fluidizing the strippable film as in the Japanese patent document. The Japanese reference clearly shows that ice (which the Examiner considers to be strippable film) is, while not stripped as ice, is melted, and the melted ice carries away the particulate matter. Melted ice is not a strippable film which is removed from the surface from the substrate being cleaned as claimed by Applicants. Applicants are, however, willing to further clarify claim 1 if necessary and suggest inserting in the claim that the removing step include that that the strippable film is removed in the form of a strippable film. This would further highlight the difference between Applicants' invention and the Japanese reference. Support for such an amendment may be found throughout the application and in the drawings.

Claims 1-3, 5, 6, 10 and 23 have been rejected under 35 USC 102(b) as being anticipated by U.S. Patent No. 4,962,776 to Liu et al. Liu et al. is cited as disclosing a cleaning process utilizing the effect of surface tension forces (4) and phase changes between a liquid and a gas. The process utilizes a cleaning fluid (52) which is applied to the surface of the article (49) to be cleaned. The fluid being subsequently frozen on the surface, thereby reducing the adhesion force between the surface of the article and undesired particulates. The surface of the article (49) is subsequently heated and the undesired particulate matter is removed through the medium of the cleaning fluid (52).

It is respectfully submitted that claims 1-3, 5, 6, 10, and 23 are properly allowable over Liu et al.

The Liu et al. patent is similar to the above Japanese patent document 3-261142, as both disclose a cleaning system whereby the surface of the article to be cleaned is wet with water, the water frozen to dislodge and contain contaminate particles and then the ice melted to remove the particles. As discussed above, this is not Applicants' invention wherein a strippable film is formed on the surface of the substrate to be cleaned and the strippable film removed as a strippable film thereby removing the contaminate particles. The strippable film is not melted and, as above, Applicants suggest amending the claims to further distinguish Applicants' invention from the Japanese and Liu et al. reference.

Claim 4 is rejected under 35 USC 103(a) as being unpatentable over Liu et al. and Bodet et al. The Examiner contends that each and every limitation of claim 4 is disclosed in Liu et al. as set forth above, except that Liu et al. fails to explicitly disclose that the applied energy is ultrasonic energy. Bodet et al. is cited as disclosing a method of cleaning a substrate including the first step of applying a solution onto the substrate and vibrating the solution. The ultrasonic energy facilitates release of deposits from the surface and it is concluded that the artisan would have been motivated to make the combination of claim 4 in an attempt to maximize the interfacial contact between contaminants and the cleaner/coating, to ensure better conformal coating.

Applicants acknowledge that Bodet et al. shows a process of cleaning a substrate where a cleaning solution is applied to a substrate surface and a hand held implement

applies energy to the cleaning solution to clean the substrate surface. It is clear there is no strippable film formed as in Applicants' invention and that the cleaning solution maintains a liquid form in the Bodet et al. process. Accordingly, Bodet et al. cannot supply the deficiencies of the primary reference as discussed above and it is respectfully submitted that depending claim 4, which is a preferred embodiment of main claim 1, is properly allowable.

Claims 1-3, 6, 7, 10 and 26 have been rejected under 35 USC 103(a) as being unpatentable over Lee and U.S. Patent No. 5,120,369 to Malotky. Lee is cited as disclosing a tape and the Examiner acknowledges that Lee does not disclose the material is formed into a strippable film after application. However, it is noted that while this is not explicitly in the claim language, the same is assumed to be the case in light of the argument of the claim. The system of Lee is considered to be a fluid and it is also believed to be a polymer. Malotky explicitly discloses that the film is applied and is made strippable after application. The Examiner concludes that the artisan would have been motivated to make the instant combination for the reasons set forth in Malotky, namely, "so that the polymer coating tightly adheres to the surface to be cleaned and decontaminated, so that intimate contact occurs allowing for substantial absorption and/or dissolution of the toxic chemical agent." Col. 2, line 20, et seq. The Examiner also notes that application of the lower viscosity liquid would result in better interfacial contact and associated improvements in particle removal.

With respect to claim 2, Lee is cited to disclose that the substrate is a wafer.

With respect to claims 3, 6, 7, 10 and 26 the Examiner contends that each and every limitation as set forth above with respect to claim 1, except that Lee apparently fails to explicitly disclose that the sacrificial coating material is a liquid or curable polymer and is formed into a strippable film. Malotky is cited to disclose the missing element and provides the motivation for making the combination. Malotky discloses a method where a tailor-made polymer film is applied to a surface for the purpose of immobilizing contaminating particles. The polymer material is a fluid and one that is capable of being cross linked and applied by conventional spraying, brushing or other coating mechanism. Thus, the Examiner contends that the missing elements are disclosed and the artisan would have been motivated to make the instant combination because the lower viscosity polymer will more effectively encapsulate contaminants, and upon curing (cross linking) securely bind the contaminants, while simultaneously allowing for removal of the applied polymer and associated undesired particles. As to claim 9, the Examiner contends when the polymer is sprayed onto the inclined surface it will inherently flow and pick up contaminants. With respect to claim 26, the spraying action or any other application procedure has the effect of imparting energy which will assist in the removal of a particulate matter by dislodging at least some of the particles from the substrate. It is respectfully submitted that the claims are properly allowable over Lee in view of Malotky.

Lee merely removes particles by attachment of the particles to an adhesive layer on the tape. Malotky does disclose the use of a polymer film system but it is clear that it does not remove particles from the surface, but is removing toxic or hazardous chemicals from the surface using a polymer that takes up the undesirable material by solution, absorption, or adsorption. The Examiner contends, however, that the missing elements of Lee are supplied by Malotky since a polymer which is capable of being cross linked is applied to the surface and the artisan would have been motivated to make the instant combination because the lower viscosity polymer more effectively encapsulates contaminants.

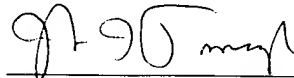
While Malotky does show formation of a polymer film it is clear that Malotky does not remove the polymer film as a strippable film as claimed by Applicants. Malotky forms the polymer film and then the solid polymer containing the toxic chemical agent may be liquefied, solubilized or decross-linked using, for example, an Alconox in water solution. This removes the polymer film together with the immobilized chemical agents. Accordingly, a polymer film is formed but is not removed as a strippable film as in Applicants' invention.

As discussed above, Applicants suggest that claim 1 be amended to indicate that the strippable film formed in Applicants' invention be removed as a strippable film containing the contaminated particles. This would, it is respectfully submitted, distinguish the invention over Lee in combination with Malotky as well as the other references.

It is respectfully submitted that the application has now been brought into a condition where allowance of the case is proper. Reconsideration and issuance of a

Notice of Allowance are respectfully solicited. Should the Examiner not find the claims to be allowable, Applicants' attorney respectfully requests that the Examiner call the undersigned to clarify any issue and/or to place the case in condition for allowance.

Respectfully submitted,



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